

SOUTHWORTH

Uponder / Tilt Tables Owner's Manual



SOUTHWORTH PRODUCTS CORP

PO Box 1380, Portland, ME 04104-1380

Telephone: 1-800-743-1000 or 207-878-0700

Fax: 207-797-4734

www.SouthworthProducts.com

service@SouthworthProducts.com

November 2010

Contents

| | |
|---|--------|
| INTRODUCTION | Page 4 |
| SAFETY | 4 |
| INSTALLATION & OPERATING INSTRUCTIONS | 5 |
| Positioning the Lift..... | 5 |
| Hydraulic Connections..... | 5 |
| Electrical Connections | 6 |
| Testing | 6 |
| Completing Installation..... | 6 |
| MAINTENANCE..... | 6 |
| Hazards..... | 6 |
| Routine periodic maintenance | 7 |
| Maintenance for machines with high cycle pkg..... | 7 |
| TROUBLESHOOTING..... | 8 |
| If the machine will not raise..... | 8 |
| The machine fails to hold a load | 9 |
| The machine fails to lower | 9 |
| ORDERING REPLACEMENT PARTS..... | 10 |
| WARRANTY | 23 |

List of Figures

| | |
|---|----|
| Single Acting Tilter | |
| Fig. 1. Electrical connections for single phase AC | 11 |
| Fig. 2. Electrical connections for three phase AC..... | 12 |
| Fig. 3. Hydraulic schematic | 13 |
| Double Acting Tilter | |
| Fig. 4. Electrical connections for single phase AC | 14 |
| Fig. 5. Electrical connections for three phase AC..... | 15 |
| Fig. 6. Hydraulic schematic | 16 |
| Upender | |
| Fig. 7. Electrical connections for single phase AC | 17 |
| Fig. 8. Electrical connections for three phase AC..... | 18 |
| Fig. 9. Hydraulic schematic | 19 |
| Lift / Tilt | |
| Fig. 10. Electrical connections for single phase AC | 20 |
| Fig. 11. Electrical connections for three phase AC..... | 21 |
| Fig. 12. Hydraulic schematics | 22 |

INTRODUCTION

This manual contains information to acquaint you with the safe and proper installation, use and upkeep of the machine. You should ensure that this manual is available to personnel working with the machine and require its use by these personnel.

In the interest of safety, please read this entire manual carefully and be familiar with its contents before you install, use or service the machine. If you have any questions about any instructions in this manual, please contact your dealer or Southworth Products Corp.

Southworth's product warranty is provided in the back of this manual. This instruction manual is not intended to be or to create any other warranty, expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose, all of which are hereby expressly excluded.

As set forth more specifically in the product warranty, Southworth's obligation under that warranty is limited to the repair or replacement of defective components, which shall be the buyer's sole remedy. Southworth shall not be liable for any loss, injury or damage to persons or property, nor for any direct, indirect or consequential damage of any kind resulting from the lift table.

SAFETY

The safety of all persons operating, maintaining, repairing or in the vicinity of the machine is of paramount concern to Southworth. This is a powerful machine with moving parts and is capable of causing personal injury if proper precautions are not taken. Therefore, throughout this manual, Southworth has identified certain hazards that may occur in the use of this machine and provided appropriate instruction or precautions that should be taken to avoid these hazards. In some cases, Southworth has also pointed out the consequences that may occur if Southworth's instructions or precautions are not followed. Southworth uses the following system of identifying the severity of the hazards associated with its products:

SAFETY CONSIDERATIONS

Southworth Upender/tilt tables are designed and manufactured to meet the safety requirements of the *ANSI Standard MH29.2-2000, Industrial Tilters*.

SIGNAL WORD

The word or words that designates a degree or level of hazard seriousness. The signal words for product safety signs are "**DANGER, WARNING** and **CAUTION**."

"DANGER" Immediate hazard which will result in severe personal injury or death.

"WARNING" Hazardous or unsafe practice which could result in severe personal injury or death.

"CAUTION" Hazardous or unsafe practice that could result in minor personal injury or property damage.

Please read and follow the instructions in this manual, including all safety instructions and precautions carefully and completely.

WARNING!

This power unit contains a hydraulic pump that is capable of developing excessive pressure. A pressure relief valve is used to set the pressure at a desired level. Tampering with, adjusting, modifying, or removing the relief valve is extremely dangerous and not recommended. Only a trained hydraulics technician, using a calibrated hydraulic pressure gauge to assure the proper pressure setting is achieved, should make adjustments to the relief valve.

If equipped, Southworth Upender/tilt tables have a safety orifice speed control. This regulates the down speed. Should a hydraulic line rupture, the unit will descent at about the normal rate.

All Southworth Upender/tilt tables are fitted (optional) with industrial, high quality over-center valves to provide smooth movement even when loads are abruptly introduced to the platform.

All Southworth models are designed with a generous safety factor of three to one.

INSTALLATION & OPERATING INSTRUCTIONS

1. Before you start to install the machine, check for local codes and ordinances, which may apply in your area. It is your responsibility to obtain any necessary permits.

2. Read all of these installation instructions carefully. Be sure to read and understand all of the warnings!

3. If the hydraulic power unit will be mounted away from the machine, the power unit should be sheltered from the weather. It should be mounted within 30 feet of the machine to minimize the pressure drop in the

hydraulic system. Be sure the hydraulic lines have been installed properly.

WARNING!

Protect the hydraulic power unit from rain or moisture. If the electrical parts in the power unit get wet, workers may be hurt by electrical shock or the electrical parts may fail.

WARNING!

The electric motor in the Upender/Tilter can create sparks. Do not install the hydraulic power unit in an area where flammable gases may be present.

Positioning the unit

1. Remove the shipping material and unskid the machine.

2. Move the machine into position, supporting the base frame of the machine. Mount the machine on a firm level surface, if necessary, insert shims to level the machine. Install lag bolts to hold the machine in place. Make sure to shim or grout under the base frame to prevent any flexing.

WARNING!

If the machine is mounted on an unstable surface, it may tip over when in use. You may be hurt, and the machine or the load may be damaged.

Hydraulic Connections

1. Mount the hydraulic power unit in a desired place.

2. Connect the hydraulic line between the hydraulic power unit and the machine.

WARNING!

Be sure that the hydraulic line will not be pinched by the machine during operation. If you allow the line to be pinched, the machine may not work properly. A hose may break, the machine may drop suddenly, and someone may be hurt.

CAUTION!

It is very important to keep the hydraulic oil free from dirt, dust, metal chips, water and other contamination. Most of the problems with hydraulic systems are caused by contamination of the oil.

Electrical Connections

DANGER!

The machine may use a power supply of up to 460 Volt AC. This voltage can kill you. Do not work with the electrical parts unless you are a qualified electrician.

1. A machine with a 115 Volt power unit needs to have a designated outlet and breaker of at least 20 AMP.

2. A machine designed for three phase AC, you must be sure the pump and motor is turning in the right direction. The machine should start to move quickly when you press the up or down button. If the machine does not move in 2 or 3 seconds, do not try to operate the machine! Exchange any two of the three phase leads. If this does not correct the problem, please contact Southworth 's Customer Service Department.

Testing

1. Check the level of the hydraulic oil. With the machine in the lowered position the tank should be full, add oil if necessary.

2. Clear the area around the machine. Remove any loose wires, lumber or other material that might get in the way of the machine as it is in use.

3. Operate the machine through its full range of travel. The machine should travel smoothly with a quiet humming sound and lower smoothly and quietly. Fully cycle several times checking the operation.

WARNING!

As the machine moves, "pinch points" are created. If you are standing too close to the machine when it is moving, your arm or leg may be caught in the moving parts and you may be hurt. Stay away from the pinch points when the lift is moving.

Completing Installation

1. Test the machine with the rated load. If the machine does not move and you hear a loud squealing noise, this means the pressure relief valve is operating. Contact Southworth for instructions.

WARNING!

Do not continue to use the machine if this happens. The pump will overheat very quickly and may be permanently damaged. Do not try to adjust the relief valve. You may overwork the machine. This can cause the machine to fail suddenly and you may be hurt.

MAINTENANCE

All service should be done by qualified personnel. Qualified personnel should be able to read and understand wiring and hydraulic diagrams. They should be able to troubleshoot live electrical circuits safely and in accordance with accepted practice. FOR SAFETY'S SAKE, if in doubt, please contact your dealer of Southworth Products Corporation Customer Service Department at (207)878-0700 or (800)743-1000.

Before servicing the lift, read and understand this entire section and the section entitled "Operating Instructions."

Hazards

There are several hazards you should be aware of as you service the lift:

Before working on the machine be sure to insert any and all maintenance devices.

DANGER!

The machine may use a power supply of up to 575 Volts. This voltage can kill you. Do not work with the electrical parts unless you are a qualified electrician.

WARNING!

As the machine moves, "pinch points" are created. Keep hands, feet and loose clothing away from these pinch points. If your arms, hands or your clothing is caught, you may be hurt.

WARNING!

Do not change the setting on the relief valve in the pump. If you do, this may damage the machine and you may be hurt. The relief valve has been included for the protection of all of the workers who use the machine.

WARNING!

Before working on the machine, be sure to release pressure on the hydraulic system.

CAUTION!

The warning labels on the machine are there for the safety of the operator. If the labels are worn or missing, replace them.

Routine periodic maintenance**Every month:**

1. Visually inspect the center pivot bushing and pins, cylinder clevis pins and bushings. Apply oil or WD-40 to all parts listed above.

Note: Although the bearings are “life-time lubricated” their performance may be extended by additional periodic lubrication (WD-40).

2. Check the level and appearance of the hydraulic fluid. With the machine in the lowered position, there should be about $\frac{3}{4}$ of an inch of air space in the tank or with the machine fully elevated, there should be about $\frac{3}{4}$ of an inch of oil left in the tank. Use a dipstick to check the oil level and add oil if necessary. Change the oil if it has darkened from its original color, turned milky white or if it feels gritty or sticky.

CAUTION!

It is important to use hydraulic fluid with the correct grade and properties. The hydraulic fluid the machine is provided with is Citgo AW-32.

Every six months:

1. Check all of the hydraulic fittings and hoses and repair the connections if necessary. Occasionally, the fittings can be worked loose by vibrations from the machine.

WARNING!

If a hydraulic fitting becomes loose or if a hydraulic hose breaks, the hydraulic fluid will escape from the system under pressure. If the machine is elevated when this happens, it will drop very quickly. Someone may be hurt or the product or the machine may be damaged.

2. Remove the down valve from the pump and the solenoid. Disassemble and clean using compressed air. Reassemble and reinstall.

3. Drain all of the hydraulic fluid from the tank and cylinders and discard it.

4. Remove the suction filter from the tank. Clean by using compressed air. Reinstall and tighten all fittings.

5. Refill the tank with new hydraulic fluid.

Maintenance for machines with high cycle package:

1. Every 10,000 cycles or every month, visually inspect the entire lift. Replace all worn or broken parts. Change the hydraulic fluid. Lubricate all pivot points and clean the roller tracks.

2. Every 30,000 cycles or every three months, visually inspect the entire lift. Check the motor starter contacts and limit switch. Clean and lubricate all pivot points. Replace all worn or broken parts. Replace all hydraulic filters and change the hydraulic fluid.

TROUBLESHOOTING

All service should be done by qualified personnel. Qualified personnel should be able to read and understand wiring and hydraulic diagrams. They should be able to troubleshoot live electrical circuits safely and in accordance with accepted practice. FOR SAFETY'S SAKE, if in doubt, please contact your dealer or Southworth Products Corporation Customer Service Department at (207)878-0700 or (800)743-1000.

Before servicing the lift, read and understand this entire section and the section entitled "Operating Instructions." Before working on the machine, be sure to insert any and all maintenance devises. Failure to do so may result in damage to the machine and severe personal injury!

CAUTION!

Do not continue to hold the "up" button for more than 2 or 3 seconds. You may damage the pump.

WARNING!

Do not change the setting on the relief valve in the pump. If you do, this may damage the machine and you may be hurt. The relief valve has been included for the protection of all of the workers who use the machine.

WARNING!

Do not disconnect the up limit switch. Instead, loosen the adjusting screw and change the position of the arm. If you do disconnect the switch, when the lift platform moves up, it may not stop at the correct spot, the machine may be damaged and people may be hurt.

CAUTION!

If cavitation is allows to continue, the pump will be damaged and will need to be replaced.

| Problem | Possible Cause | Check This |
|-----------------------------------|--|--|
| Machine will not fully tilt. | Weight of load too heavy. | Check the actual weight of the load |
| | Motor not running. | Check the main disconnect switch, fuses, and wiring to the motor. A 20 amp, designated braker must be supplied for 110V. |
| | Hydraulic oil level low. | Check Oil Level |
| | Machine has reached its limit switch. | Limit switch may need to be adjusted. |
| | Motor may be "single phasing" | If motor hums but does not turn, check motor wiring and line fuses. |
| | Motor voltage too low. | Supply voltage should be +/- 10% of the rating at the motor terminals. |
| | Tank vent plugged. | If supplied, remove solid plug from tank, install vent plug. |
| | Suction filter clogged. | Clean suction filter as described in periodic maintenance. |
| | Vacuum leak in suction line. | Check all fittings in suction line. |
| | Down-valve may be energized. | Check wiring to down-valve, and solenoid in the valve. |
| | Missing coupling | Check to ensure the coupling has been installed between the pump and motor. |
| The machine fails to hold a load. | Down-valve may be leaking. | Remove down-valve and inspect for debris which may be preventing it from closing. |
| | Down-valve may be energized. | Check the solenoid in the valve with a volt meter. |
| | Cylinder may be leaking. | Check for oil in cylinder in the vent line. |
| Machine will not lower | Down-valve may be de-energized. | Check the solenoid in the valve with a volt meter. |
| | Flow control needs adjustment | Adjust flow control as needed. |
| Machine raises too slowly. | Voltage may be low. | Check voltage at motor to ensure proper voltage is being supplied. |
| | Foreign material clogging suction filter, breather cap or pressure line. | Remove necessary components and clean. |
| | Pump may be overheating due to insufficient oil. | Check oil level and oil viscosity. |
| Machine lowers too slow. | Down-valve maybe not be fully open or stuck closed. | Remove down-valve and clean. |
| | Flow control needs adjustment | Adjust flow control as needed. |

If the steps listed above do not solve the problem, please call the Customer Service Department at Southworth Products Corp. (207)878-0700 or (800)743-1000.

ORDERING REPLACEMENT PARTS

Southworth has carefully chosen the components in your lift to be the best available for the purpose. Replacement parts should be identical to the original equipment. Southworth will not be responsible for equipment failures resulting from the use of incorrect replacement parts or from unauthorized modifications of the machine.

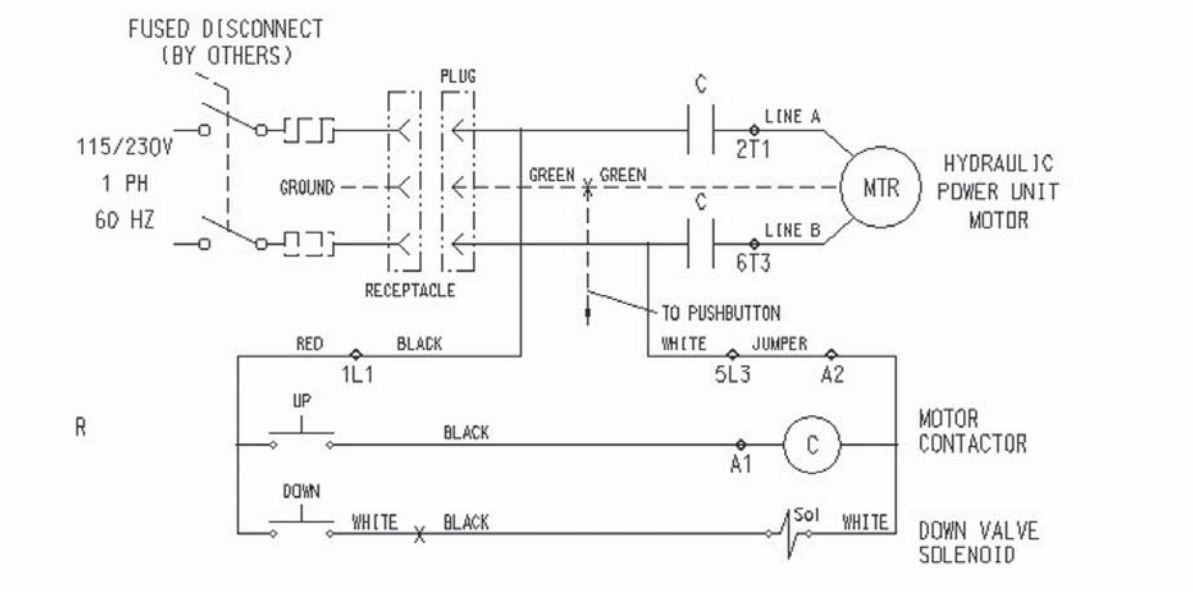
Southworth will gladly supply you with replacement parts for your Southworth lift. With your order, please include the model number and the serial number of the lift. You may find these numbers on the nameplate, which is located on the crossbar at the base of the cylinder(s). When you are ordering parts for a cylinder, also include the cylinder number. This is stamped on the base of the cylinder housing.

To order replacement parts, please call the Parts Department at (207)878-0700 or (800)743-1000. Parts are shipped subject to the following terms:

- FOB factory
- Returns only with the approval of our parts department
- Payment net 30 days (except parts covered by warranty)
- Freight collect (except parts covered by warranty)

Parts replaced under warranty are on a “charge-credit” basis. We will invoice you when we ship the replacement part, then credit you when you return the worn or damaged part.

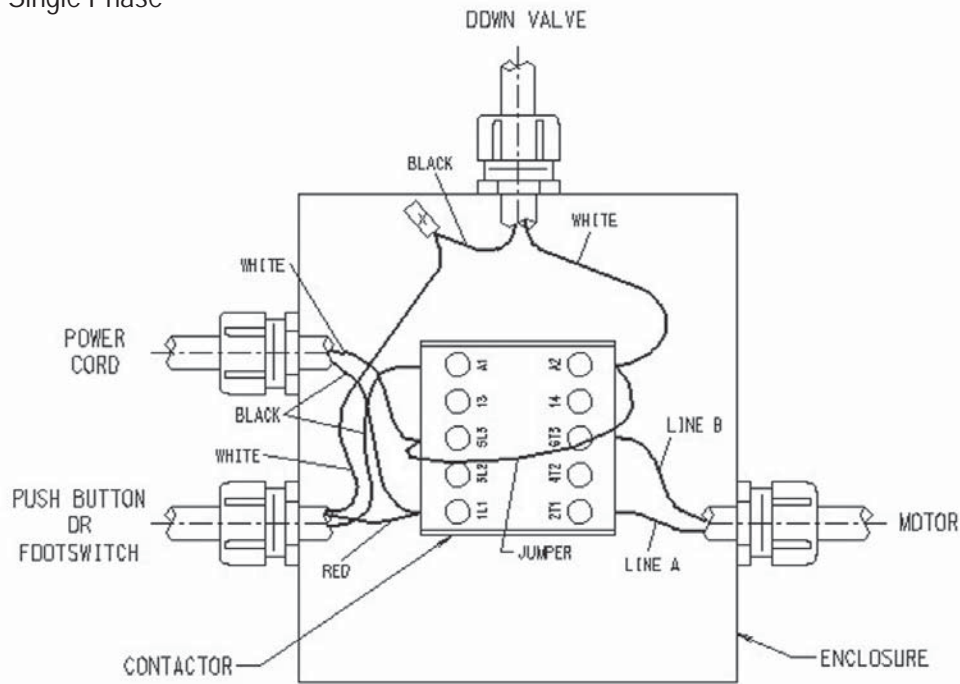
SOUTHWORTH PRODUCTS CORP
Parts Department
Telephone: (207) 878-0700
(800) 743-1000
Fax: (207) 797-4734
repairparts@southworthproducts.com



Single Acting Tilter

Figure 1: Electrical Connections for Single Phase AC

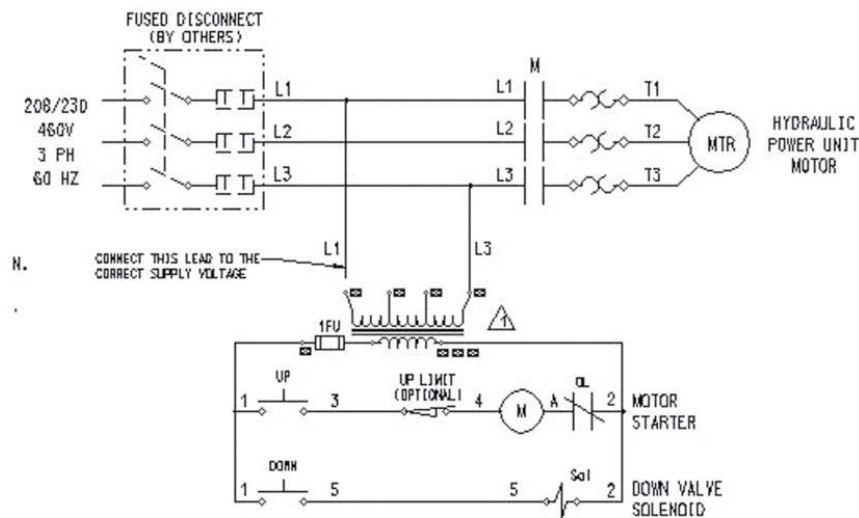
- ◇ - INDICATES TERMINAL ON THE CONTACTOR
- X - INDICATES WIRE CONNECTION IN THE ENCLOSURE



- NOTE:
- ENTRY LOCATIONS MAY DIFFER FROM THOSE SHOWN.
 - GROUND CONNECTIONS, ALTHOUGH NOT SHOWN, ARE REQUIRED.

OPERATING AND MAINTENANCE MANUAL

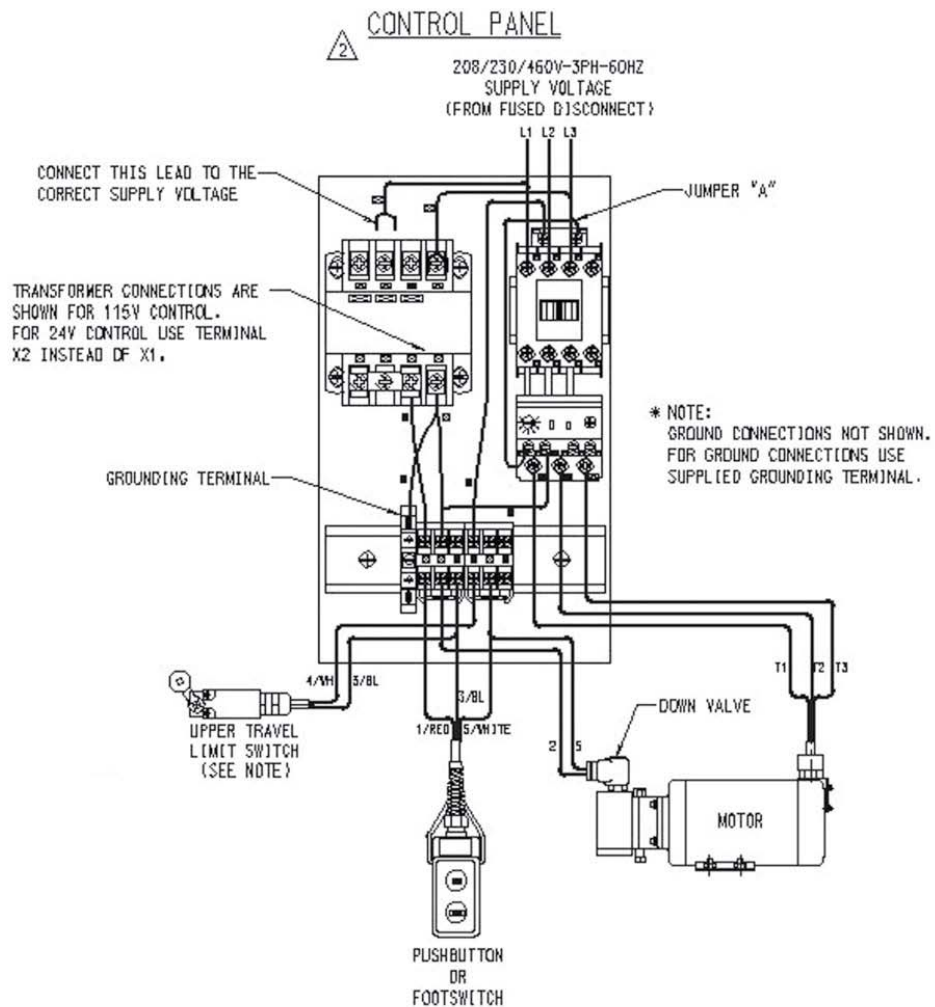
WIRING DIAGRAM



NOTE: UPPER TRAVEL LIMIT SWITCH IS OPTIONAL. IF LIMIT SWITCH IS ABSENT, MOVE WIRE 4 IN PANEL FROM TERMINAL 4 TO TERMINAL 3 AND RENUMBER AS WIRE 3.

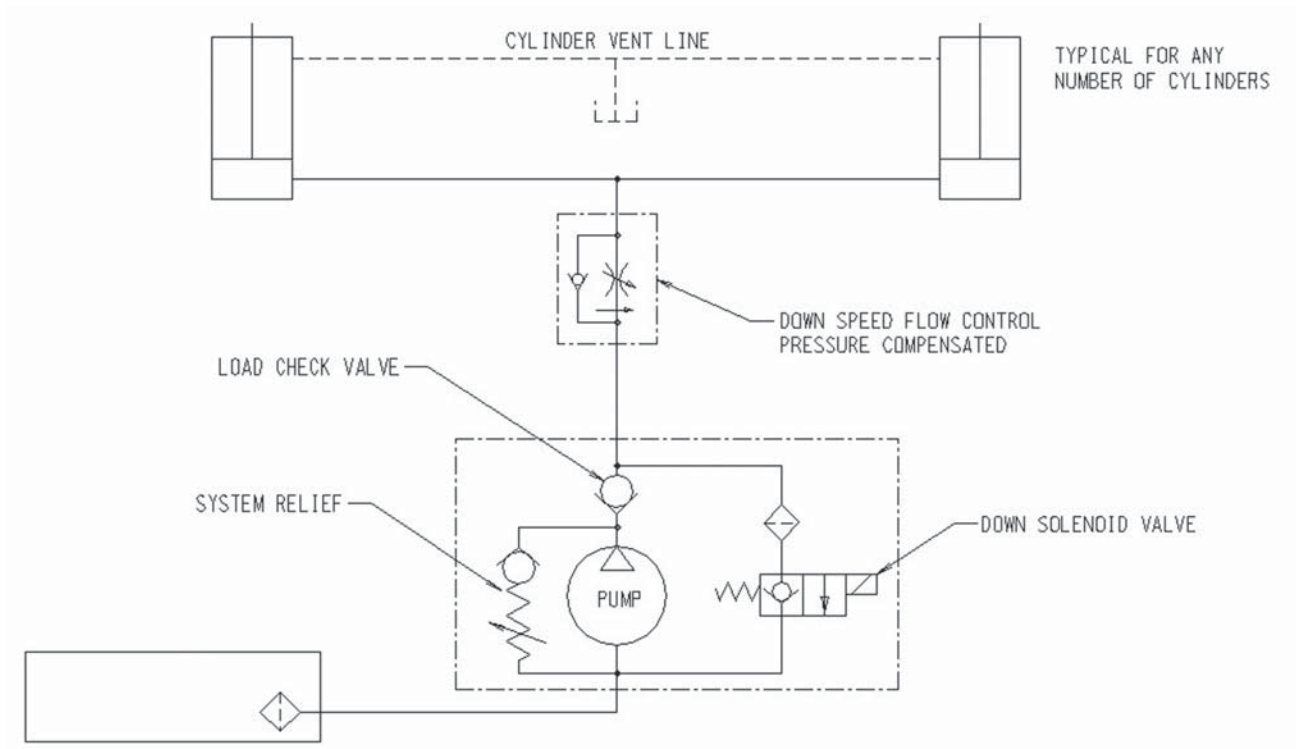
Single Acting Tilter

Figure 2: Electrical Connections for Three Phase AC



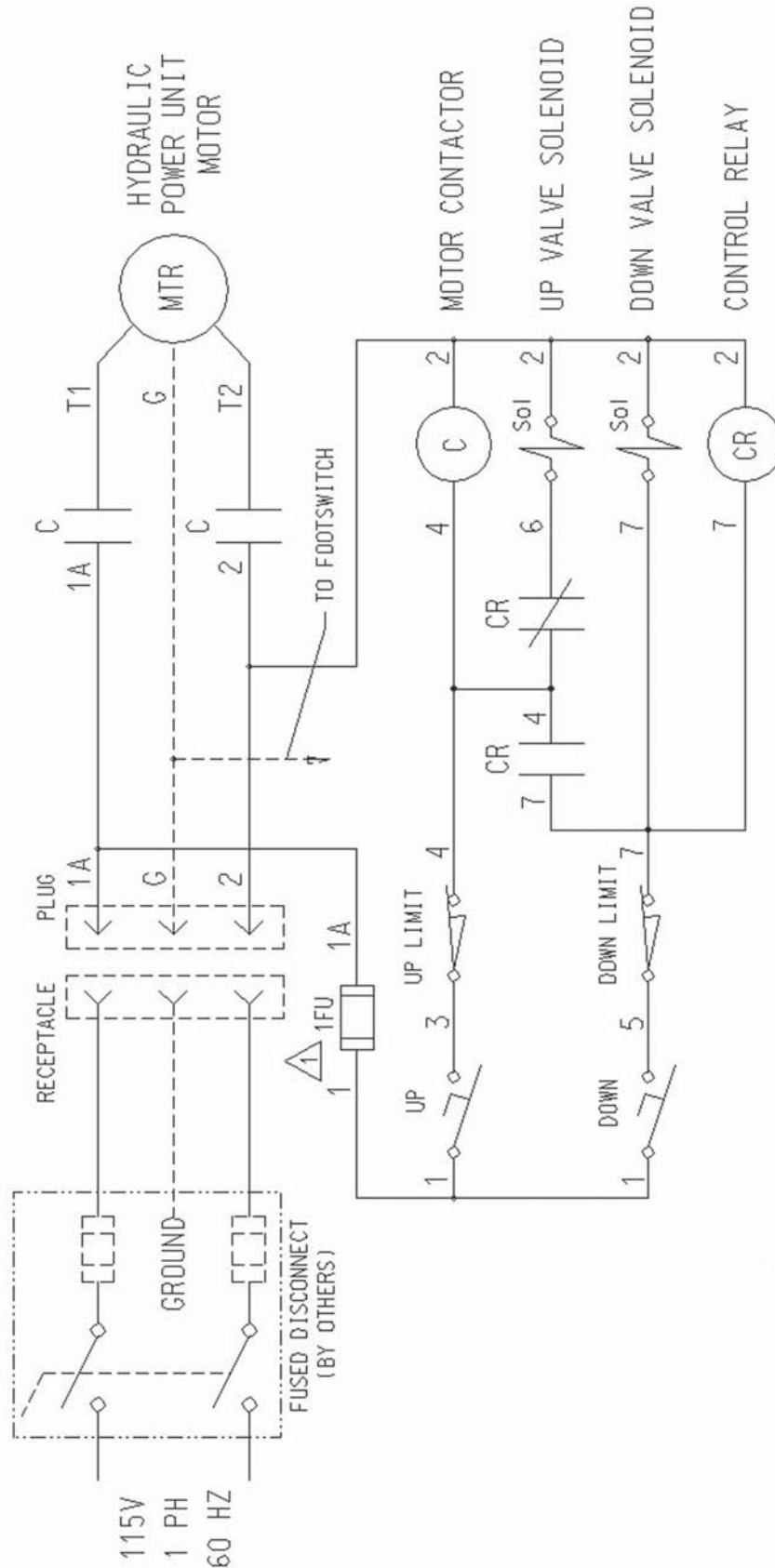
Single Acting Tilter

Figure 3: Hydraulic Schematic



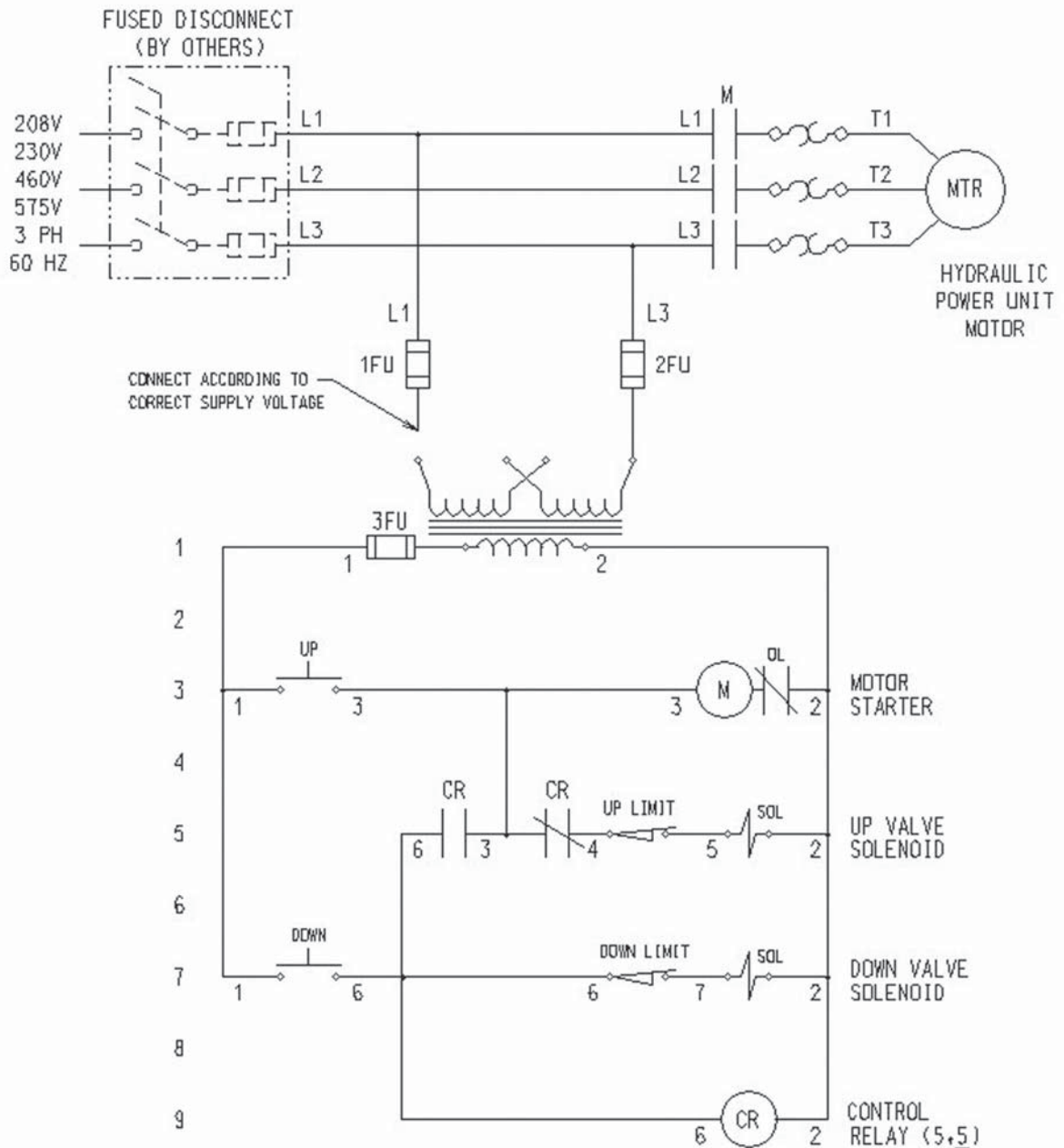
Double Acting Tilter

Figure 4: Electrical Connections for Single Phase AC



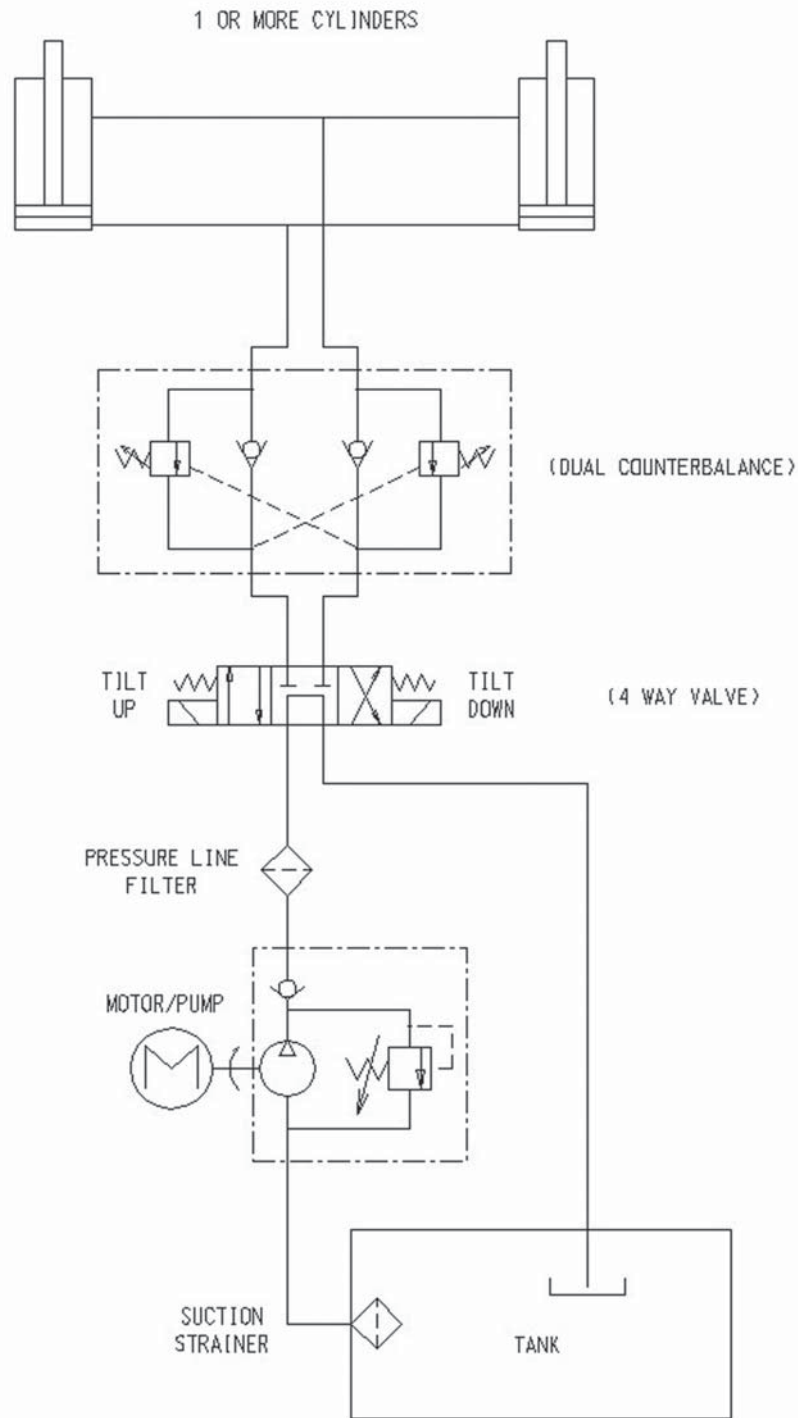
Double Acting Tilter

Figure 5: Electrical Connections for Three Phase AC



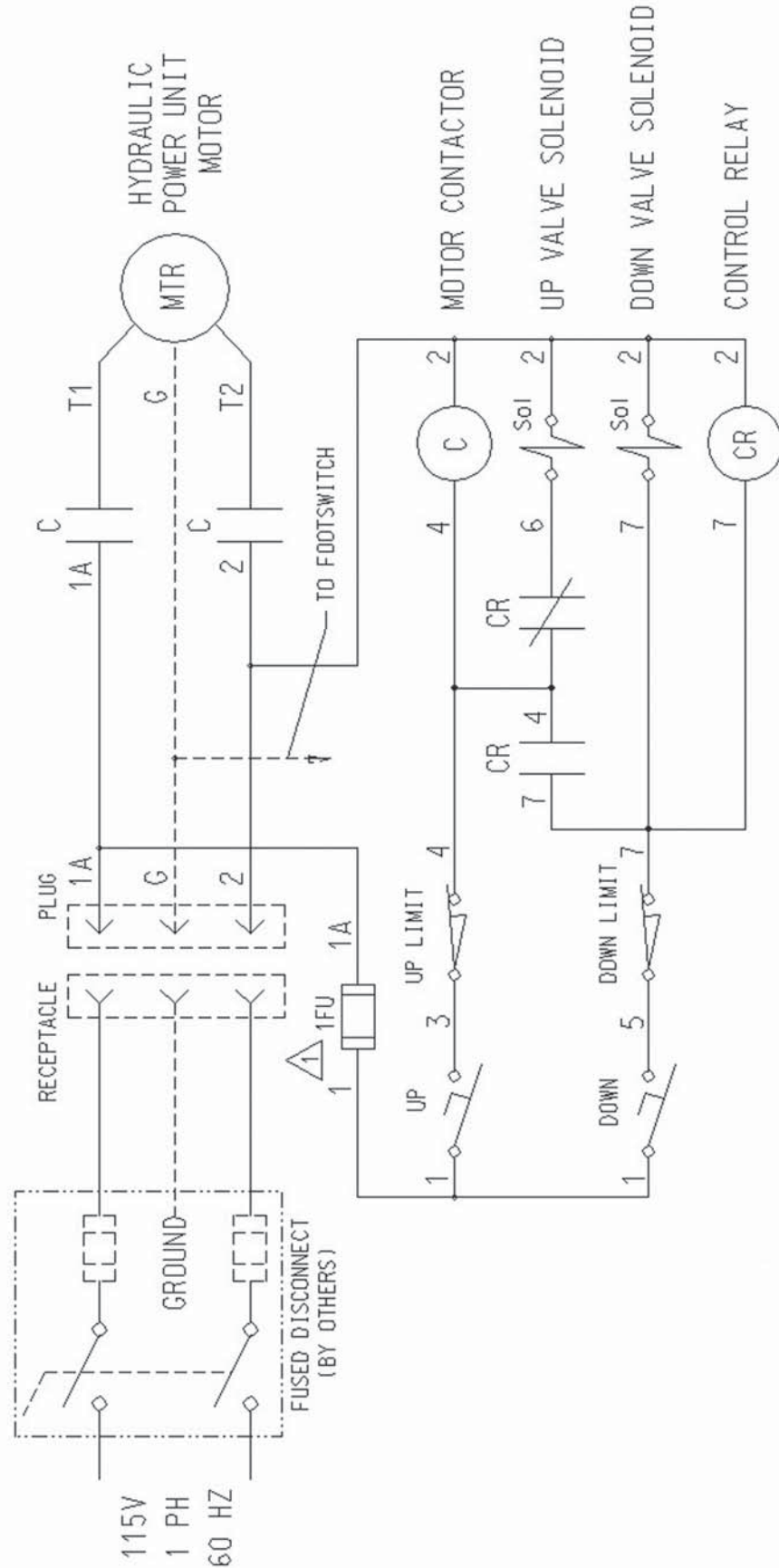
Double Acting Tilter

Figure 6: Hydraulic Schematic



Upender

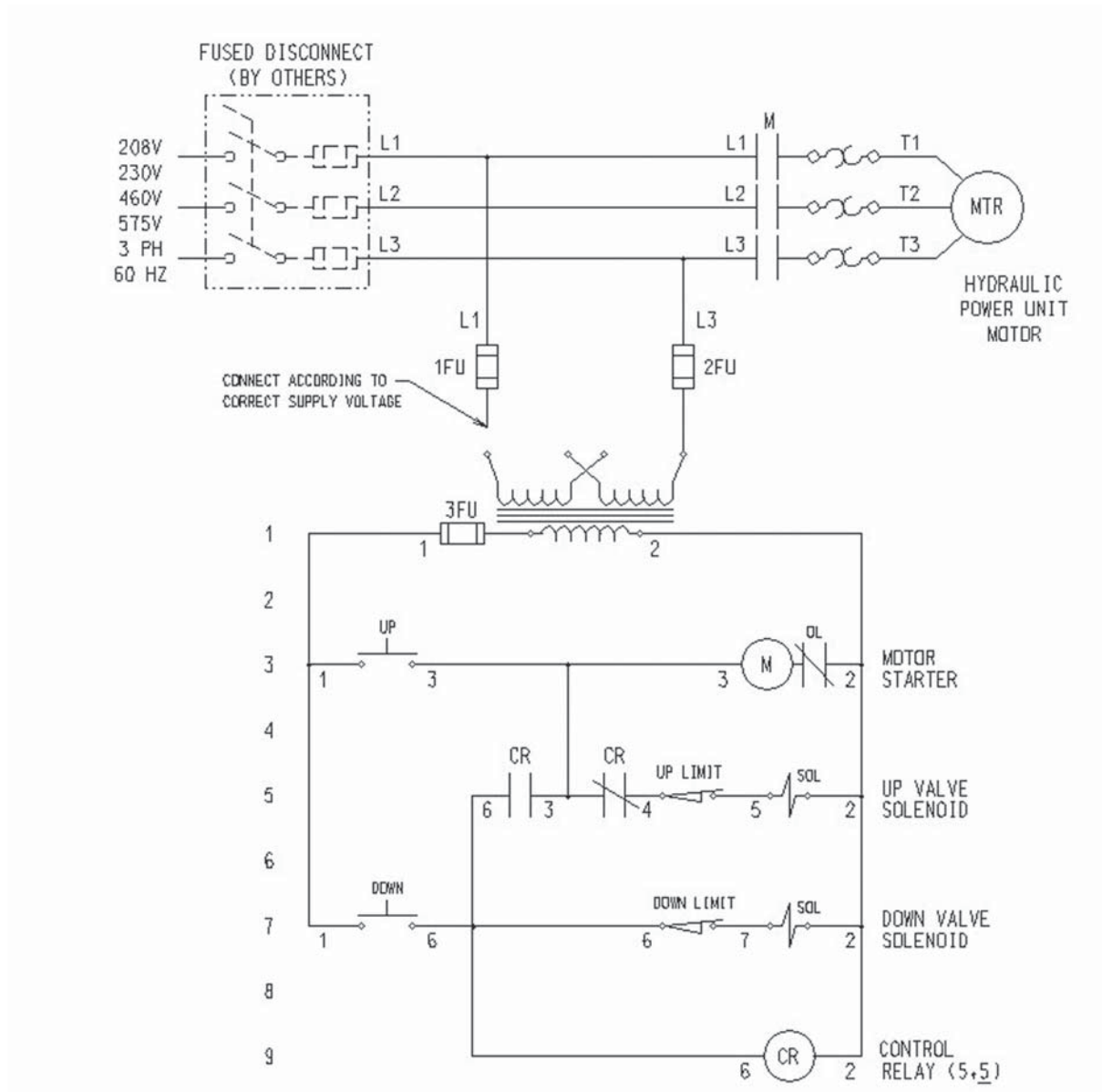
Figure 7:
Electrical Connections
for Single Phase AC



OPERATING AND MAINTENANCE MANUAL

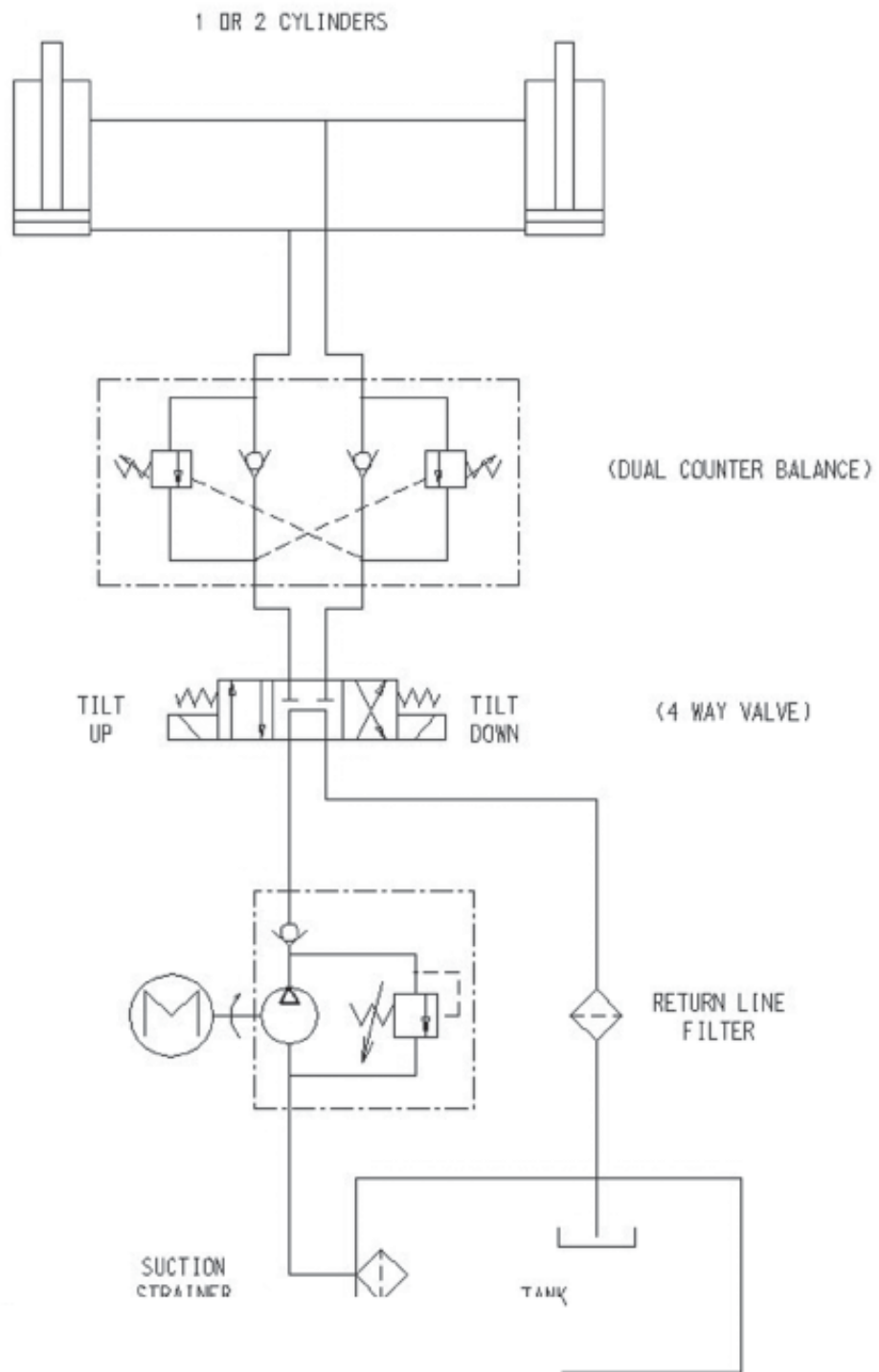
Uponder

Figure 8: Electrical Connections
for Three Phase AC

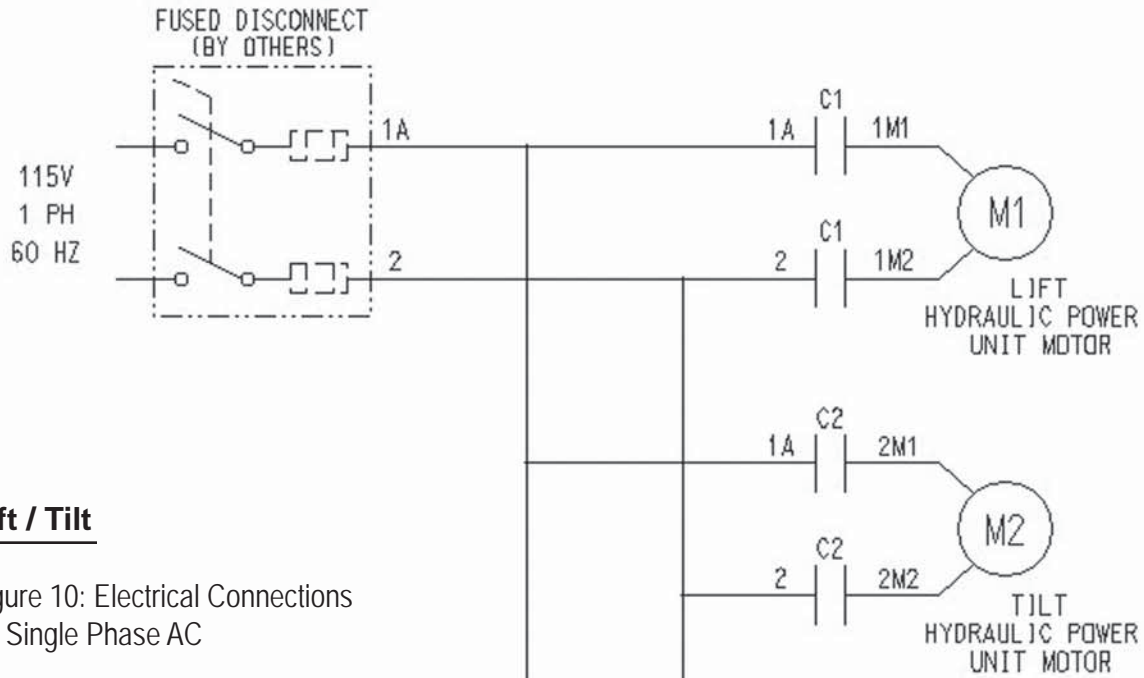


Uperder

Figure 9: Hydraulic Schematic

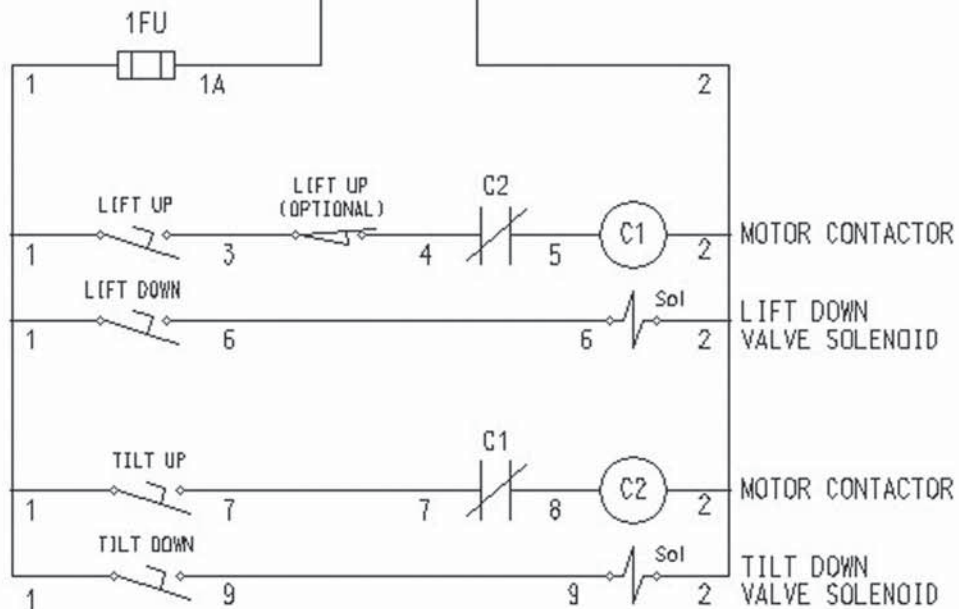


OPERATING AND MAINTENANCE MANUAL



Lift / Tilt

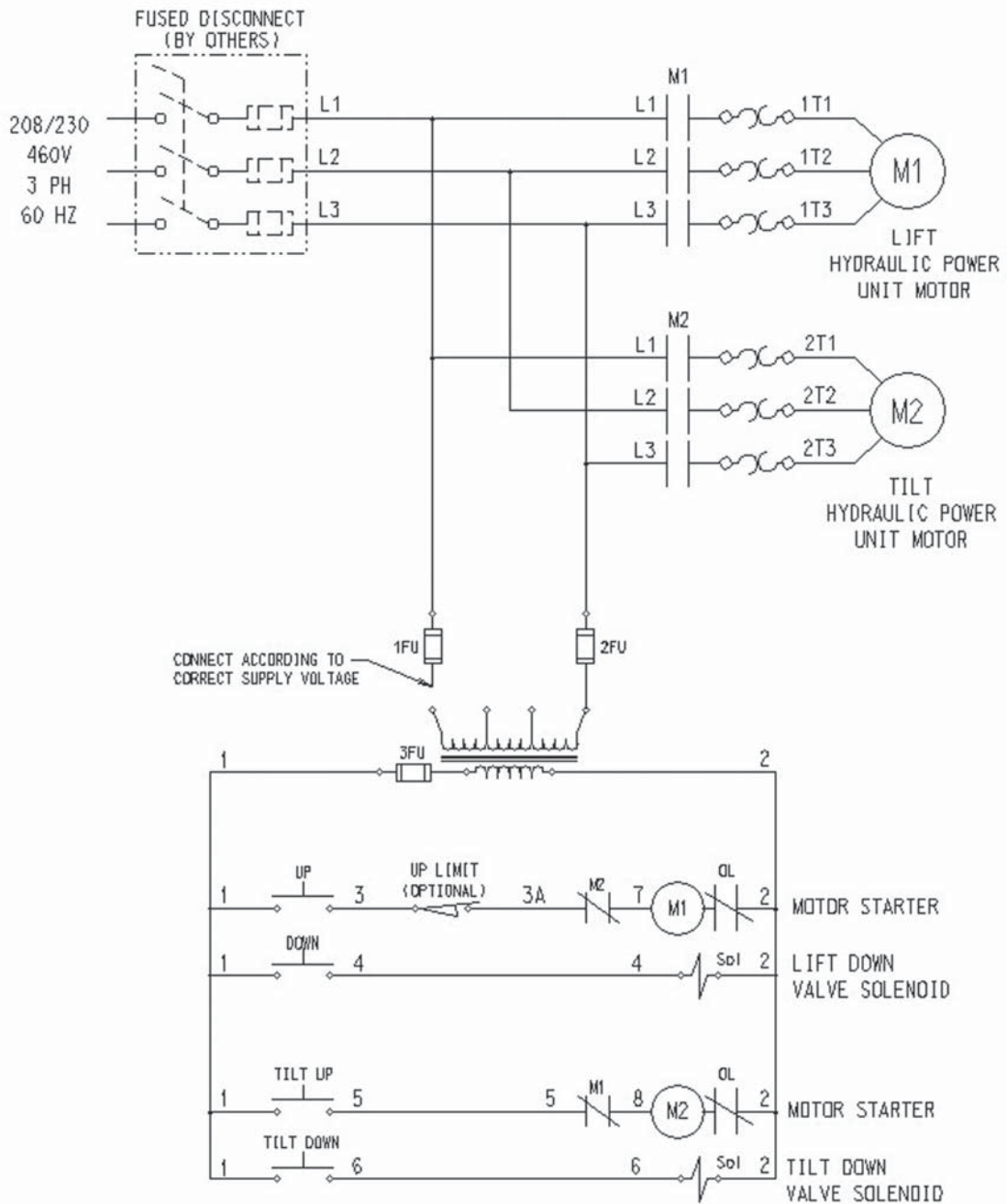
Figure 10: Electrical Connections for Single Phase AC



SEE B-3057261 FOR LIFT/TILT WITH LIFT UP AND TILT UP LIMIT

Lift / Tilt

Figure 11: Electrical Connections for Three Phase AC

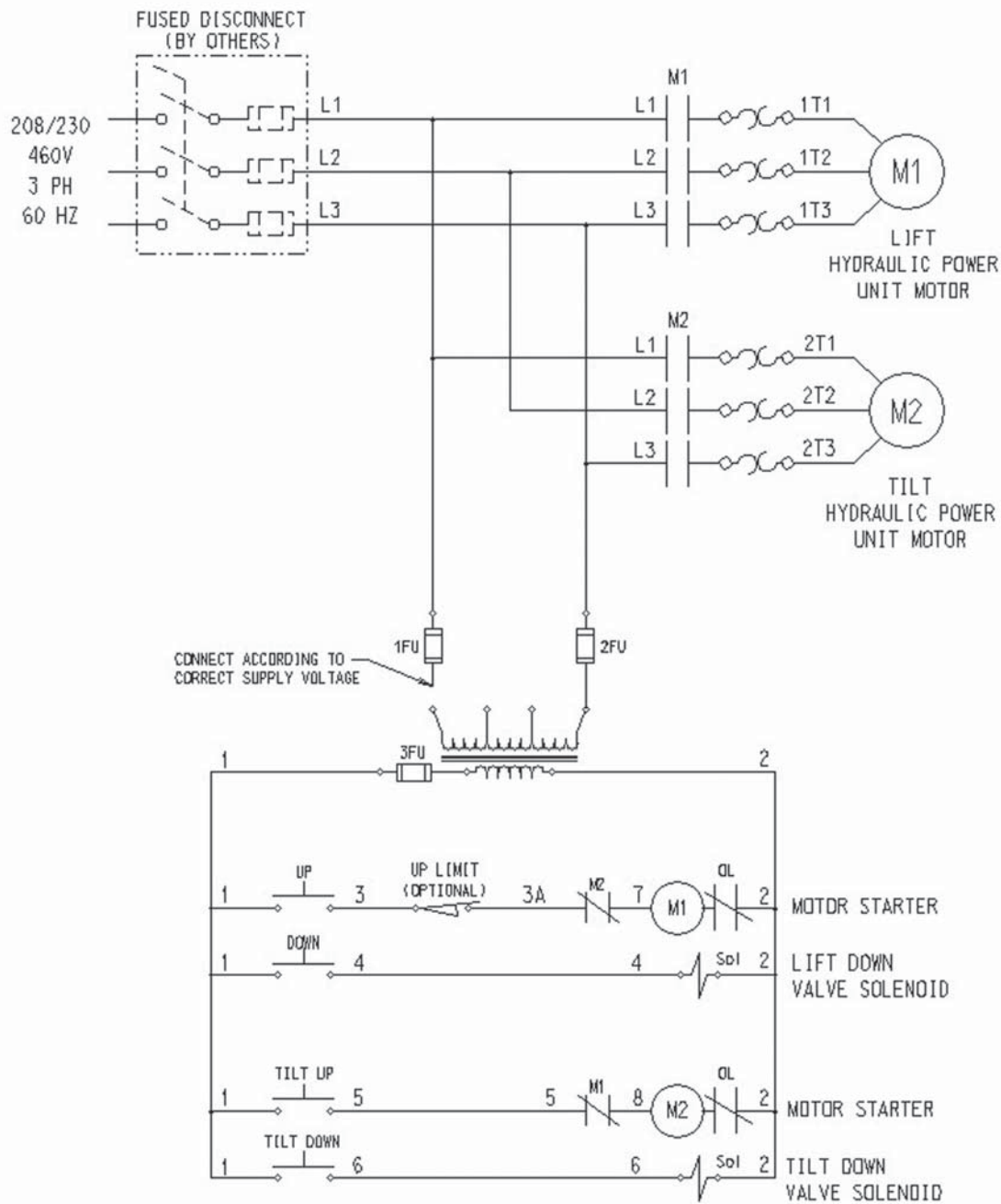


NOTE:
UPPER TRAVEL LIMITSWITCH IS OPTIONAL.
IF UP LIMIT IS ABSENT, CONNECT WIRE 3
DIRECTLY TO NC CONTACT ON MOTORSTARTER.

OPERATING AND MAINTENANCE MANUAL

Lift / Tilt

Figure 12: Hydraulic Schematics



NOTE:
UPPER TRAVEL LIMITSWITCH IS OPTIONAL.
IF UP LIMIT IS ABSENT, CONNECT WIRE 3
DIRECTLY TO NC CONTACT ON MOTORSTARTER.

SOUTHWORTH 1 YEAR WARRANTY

Southworth Products Corp warrants this product to be free from defects in material or workmanship for a period of **1 year** of single shift usage from date of shipment, providing claim is made in writing within that time period. This warranty shall not cover modified designs for special applications, failure or defective operation caused by misuse, misapplication, negligence or accident, exceeding recommended capacities, failure to perform required maintenance or altering or repairing, unless alteration is authorized by Southworth Products Corp. Except as set forth herein, there are no other warranties, express or implied, including the warranties of merchantability and fitness for a particular purpose, all of which are hereby excluded.

Southworth Products Corp makes no warranty or representation with respect to the compliance of any product with state or local safety or product standard codes, and any failure to comply with such codes shall not be considered a defect of material or workmanship under this warranty. Southworth Products Corp shall not be liable for any direct or consequential damages arising out of such noncompliance.

Southworth Products Corp's obligation under this warranty is limited to the replacement or repair of defective components at its factory or another location at Southworth Products Corp's discretion. This is buyer's sole remedy. Except as stated herein, Southworth Products Corp will not be liable for any loss, injury or damage to persons or property, nor for direct, indirect, or consequential damage of any kind, resulting from failure or defective operation of said product.

This warranty may be altered only in writing by Southworth Products Corp, Portland, Maine.

SOUTHWORTH

SOUTHWORTH PRODUCTS CORP
P.O. Box 1380, Portland, ME 04104-1380
Telephone: (800) 743-1000 • (207) 878-0700
Fax: (207) 797-4734
www.SouthworthProducts.com

SOUTHWORTH

We'll Show You How

Southworth is *the* world class supplier of products designed to improve productivity and enhance safety. Our staff has over 400 years of engineering experience. If one of our standard products does not meet your needs, we can design custom equipment specifically suited to your material handling application.



Spring Loader



Lift with Turntable



Portable Tilters



Dock Lifts



Palletizing



Portable Lifts



Stretchwrapping



Positioning



Lift & Tilters



Floor to Mezzanine Lifts

For more information, contact Southworth Products
Telephone 800-743-1000 - Fax 207-797-4734
Email: sales@SouthworthProducts.com